



## Appendix B

### RF Test Data for BT (BLE) (Conducted Measurement)

Product Name: Flow Gateway v4

Trade Mark: M5STACK

Test Model: FGV4

#### Environmental Conditions

Temperature:	25.6° C
Relative Humidity:	52.5%
ATM Pressure:	100.0 kPa
Test Engineer:	Emiya lin
Supervised by:	Simba Haung



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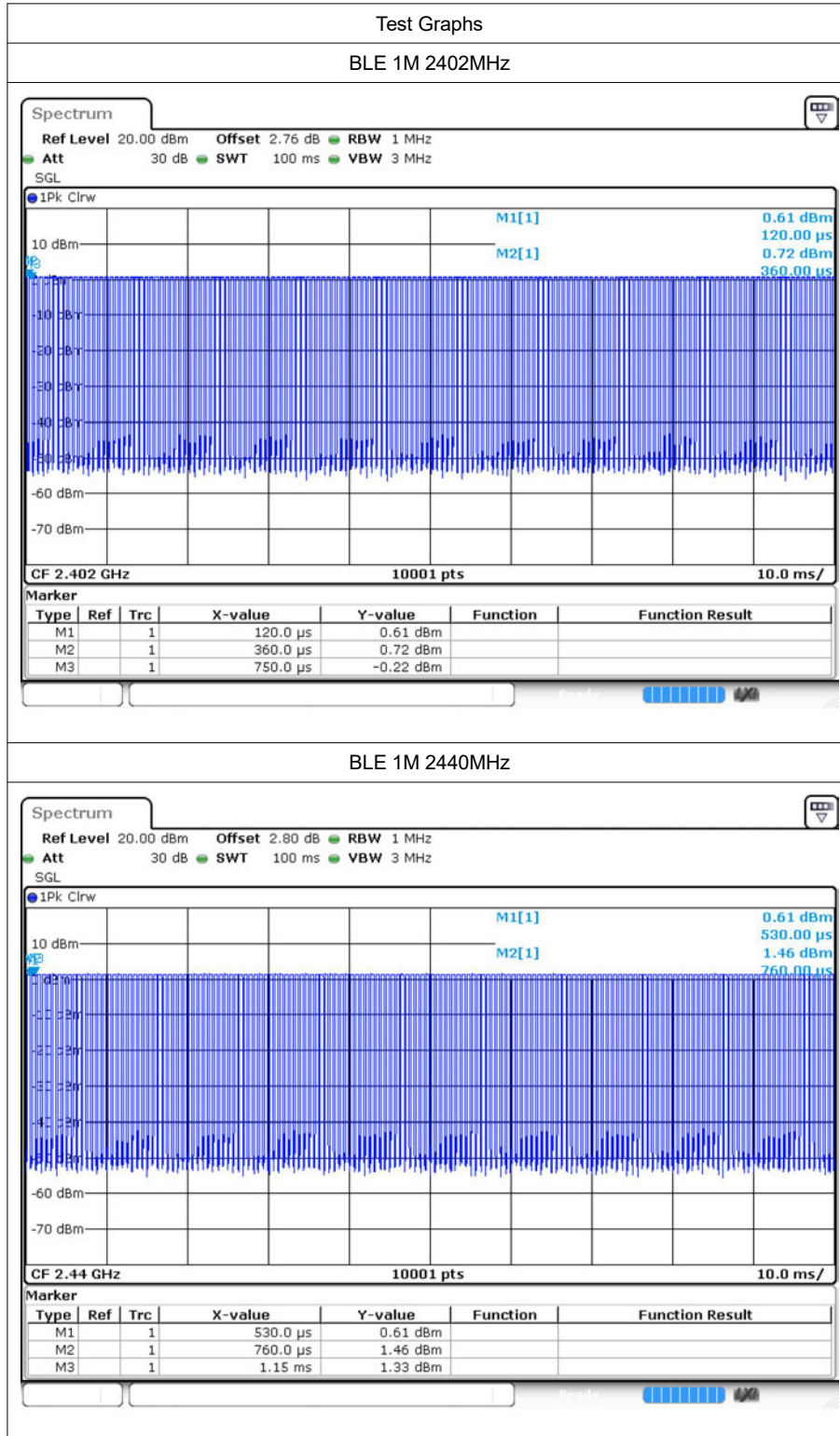


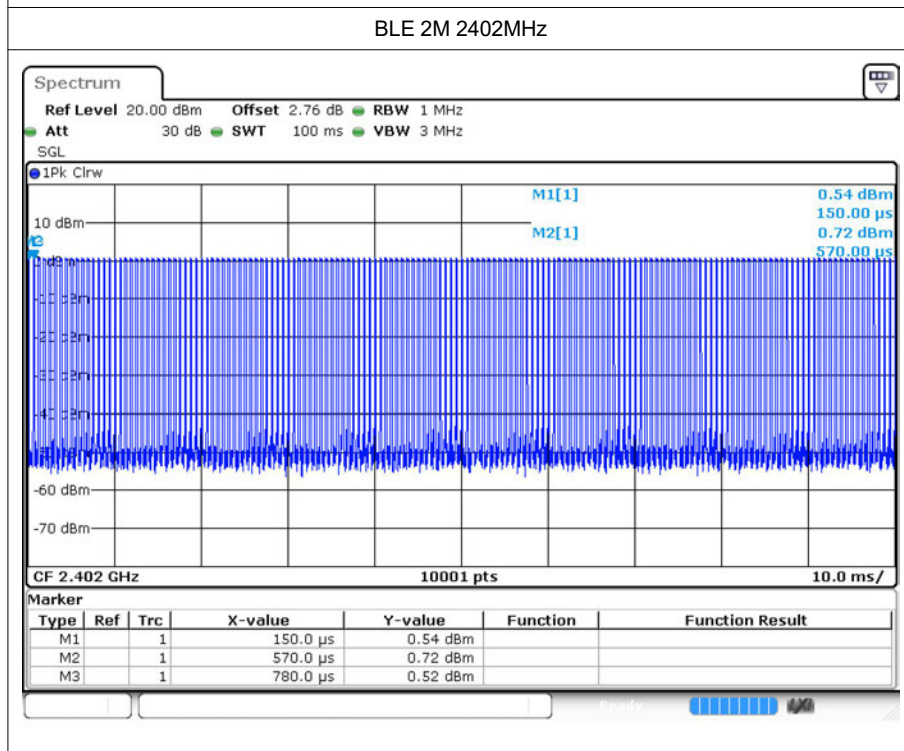
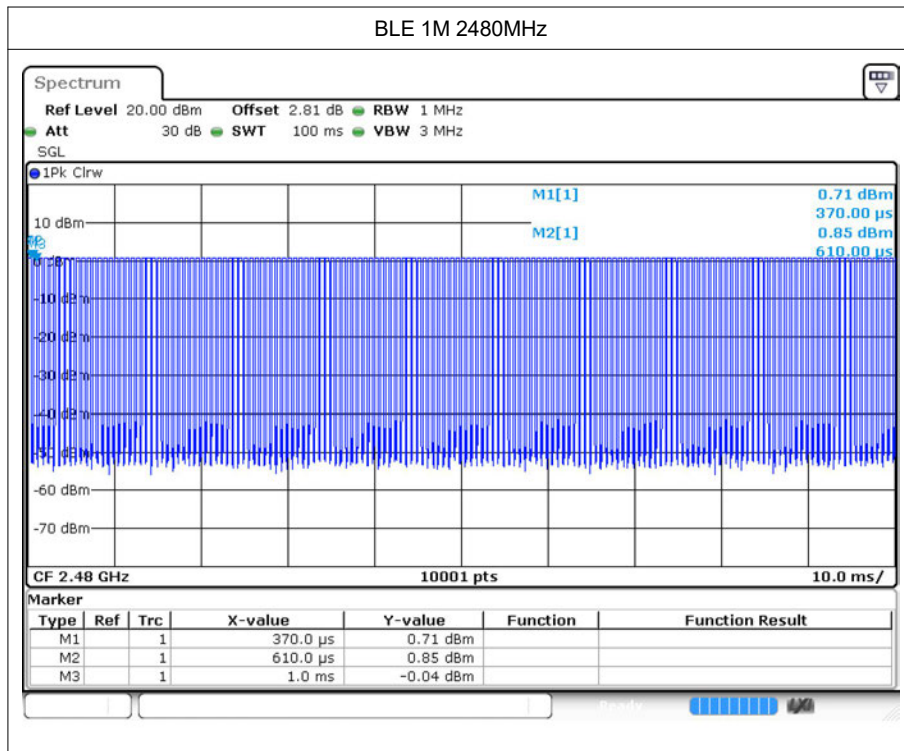
# 1 Duty Cycle

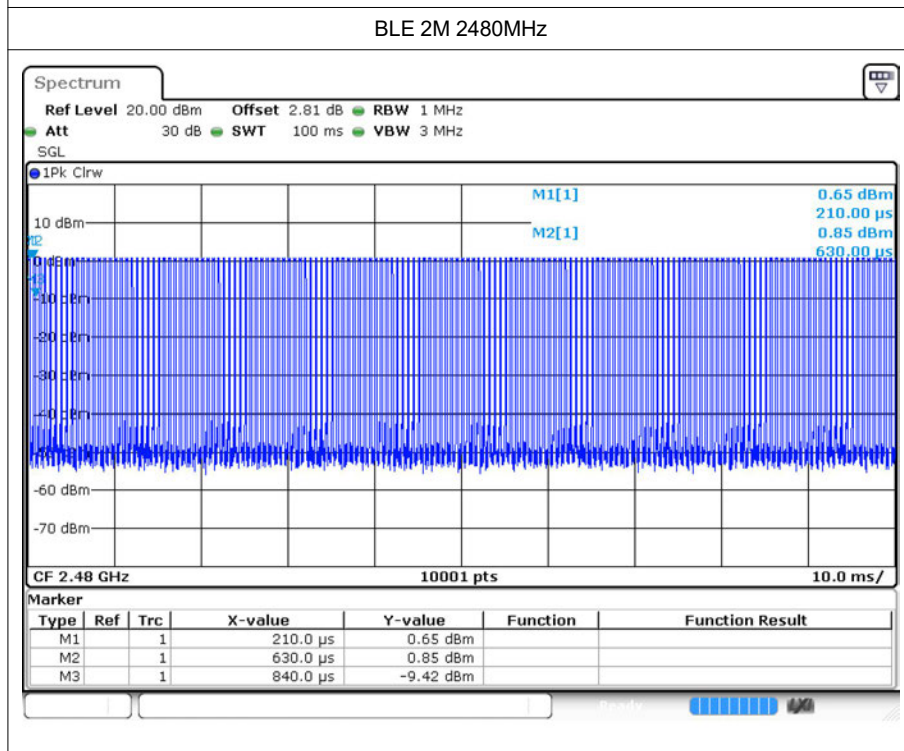
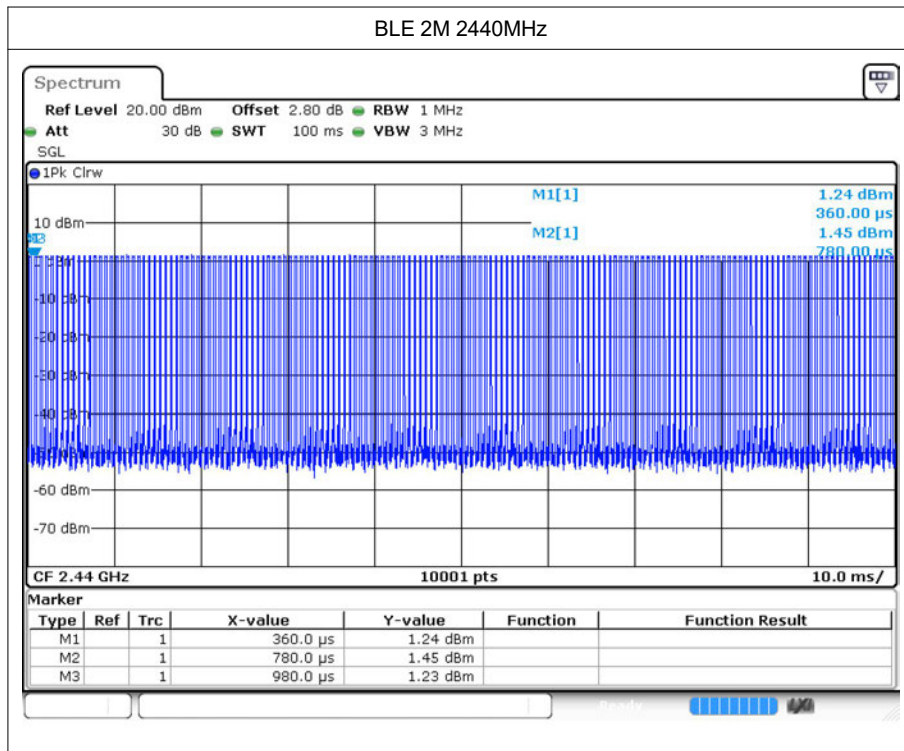
## 1.1 Test Result

Mode	Frequency (MHz)	Duty Cycle (%)	Correction Factor	1/T (kHz)
BLE 1M	2402	64	1.94	2.56
BLE 1M	2440	63.99	1.94	2.56
BLE 1M	2480	64	1.94	2.56
BLE 2M	2402	34.61	4.61	4.76
BLE 2M	2440	34.69	4.6	5
BLE 2M	2480	35.21	4.53	4.76

## 1.2 Test Graphs







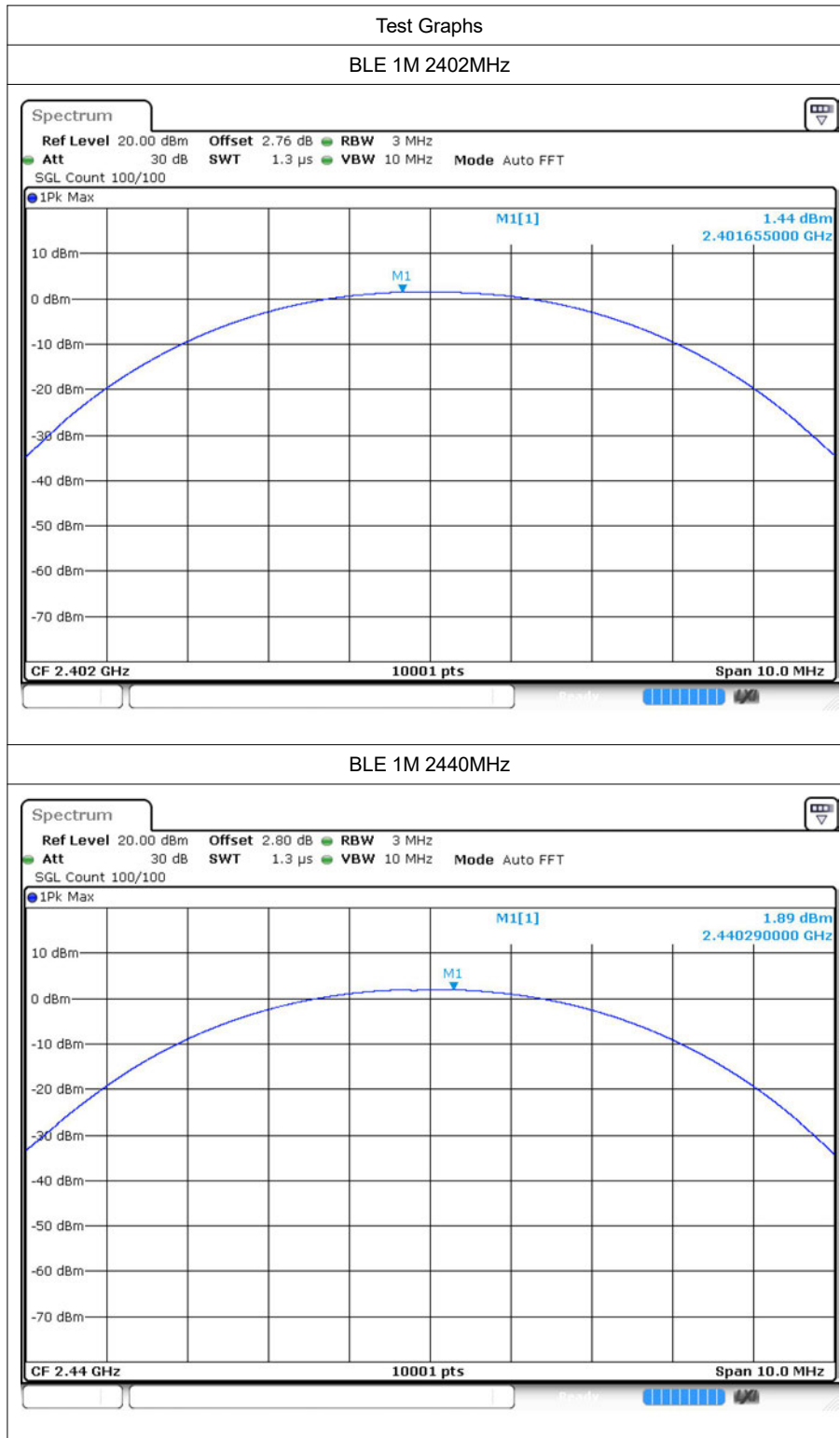


## 2 Maximum Conducted Output Power

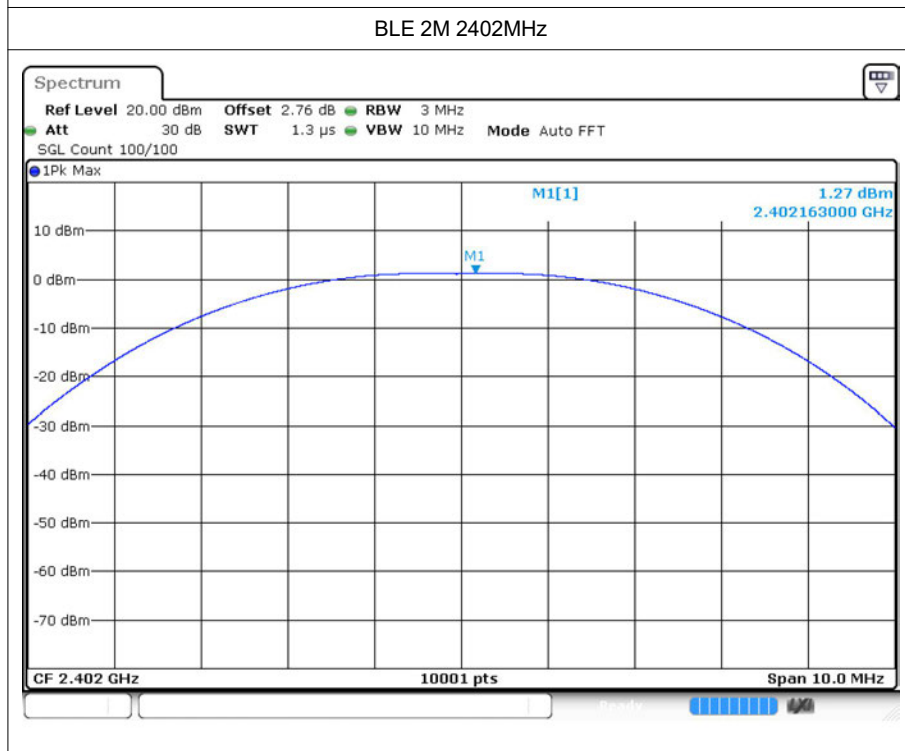
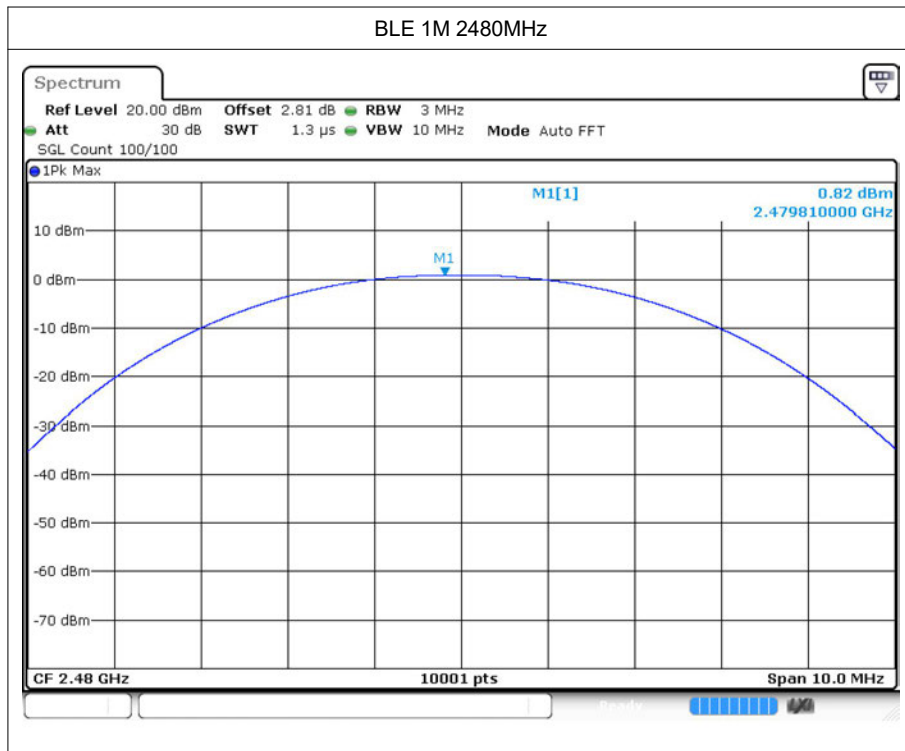
### 2.1 Test Result

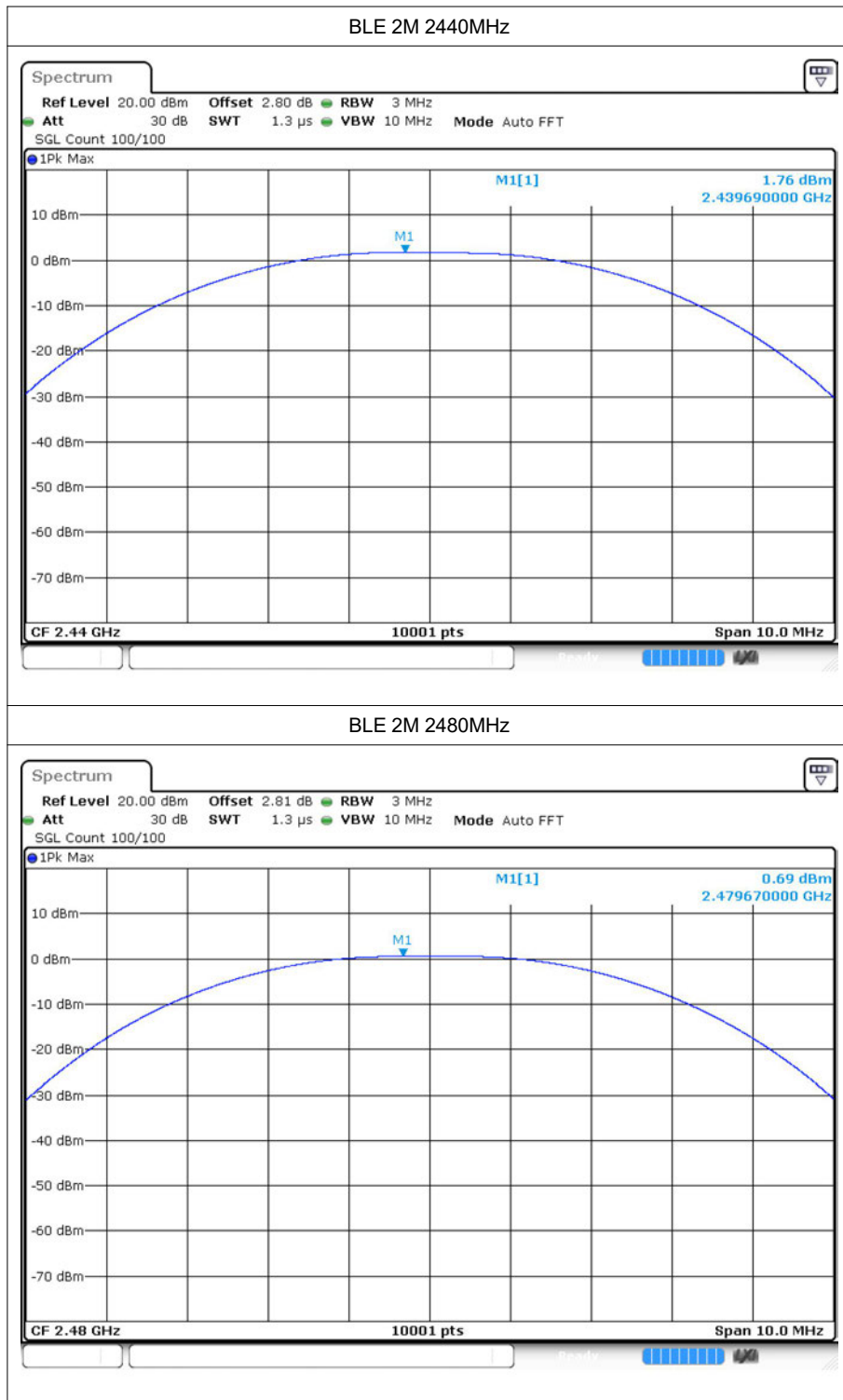
Mode	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Verdict
BLE 1M	2402	1.44	30	Pass
BLE 1M	2440	1.89	30	Pass
BLE 1M	2480	0.82	30	Pass
BLE 2M	2402	1.27	30	Pass
BLE 2M	2440	1.76	30	Pass
BLE 2M	2480	0.69	30	Pass

## 2.2 Test Graphs







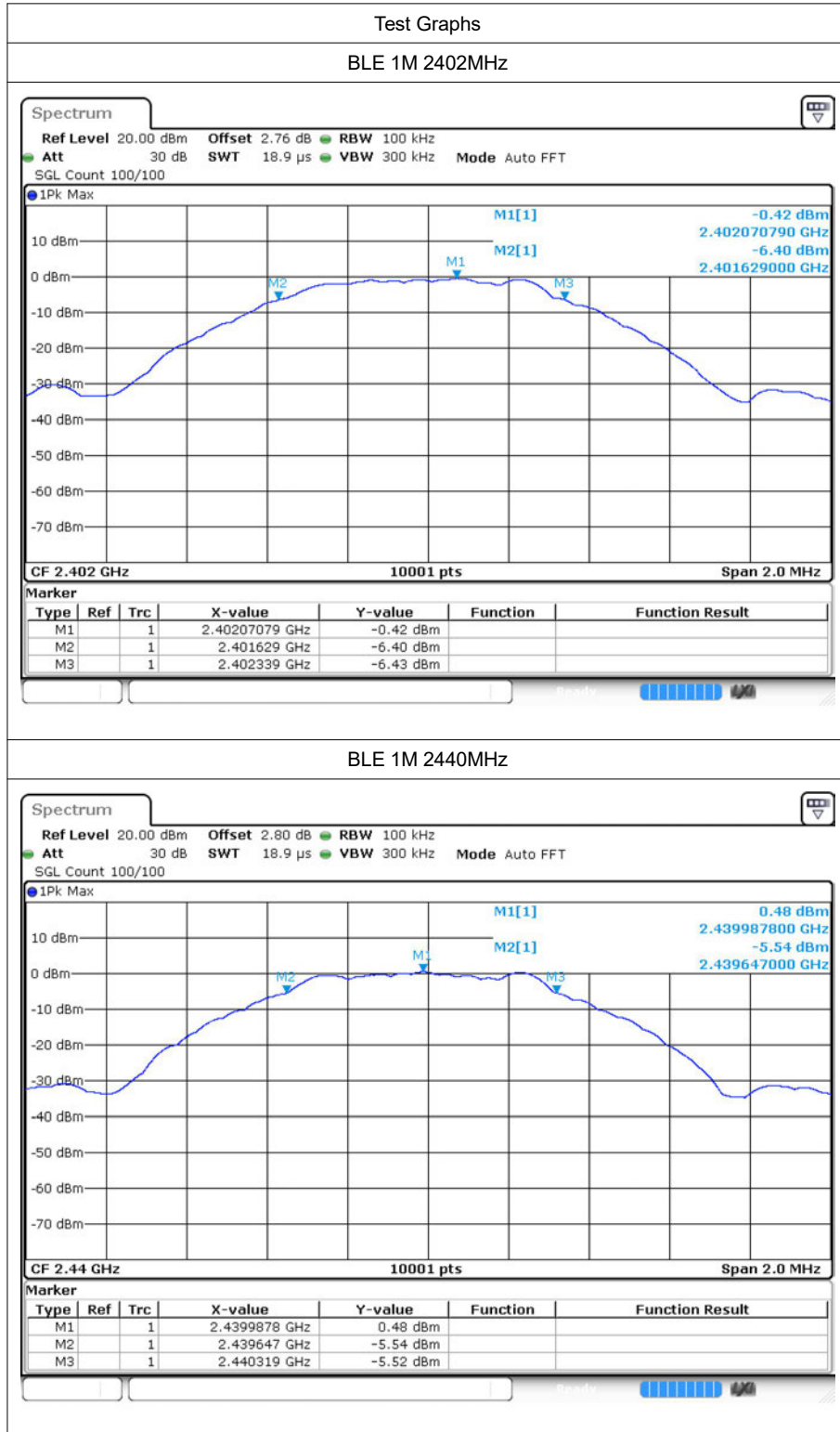


### 3 -6dB Bandwidth

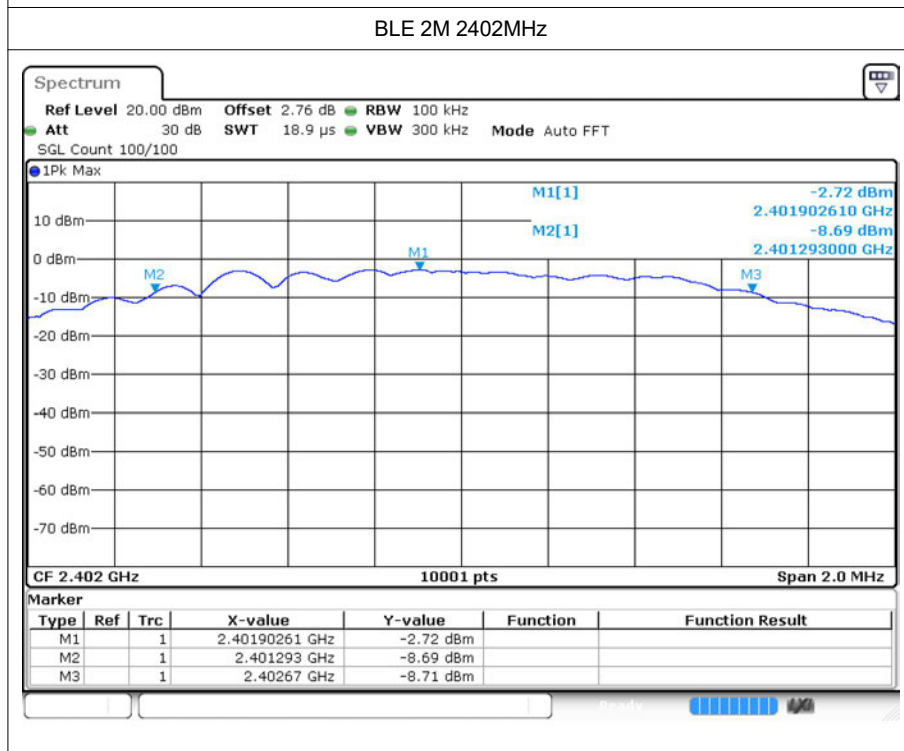
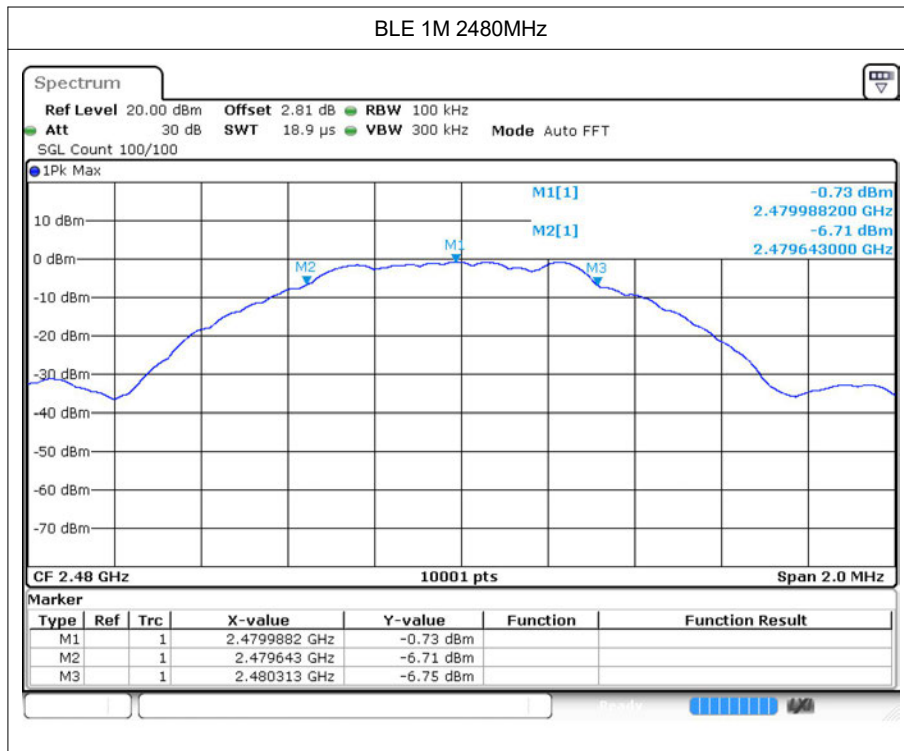
#### 3.1 Test Result

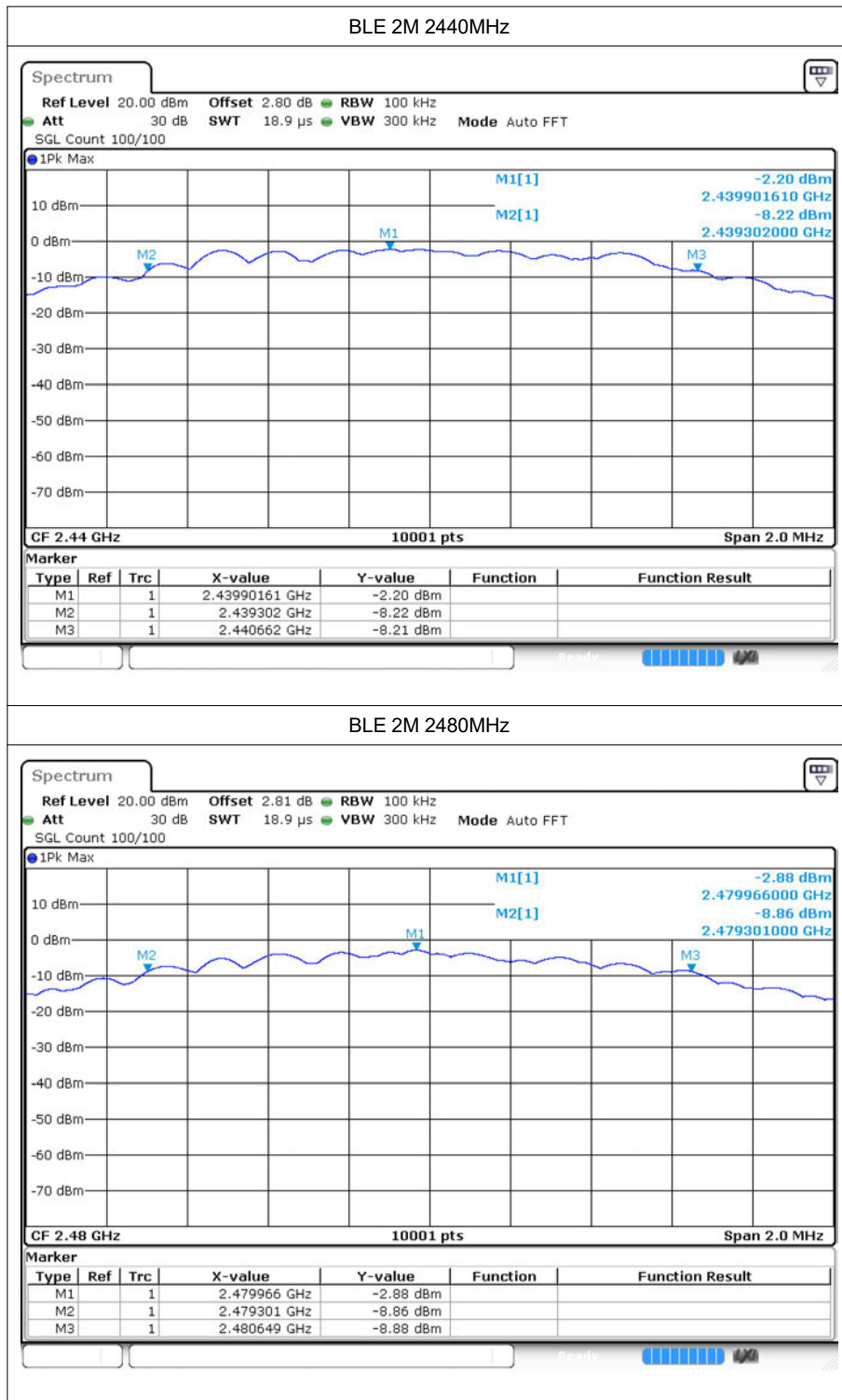
Mode	Frequency (MHz)	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
BLE 1M	2402	0.71	0.5	Pass
BLE 1M	2440	0.671	0.5	Pass
BLE 1M	2480	0.67	0.5	Pass
BLE 2M	2402	1.377	0.5	Pass
BLE 2M	2440	1.36	0.5	Pass
BLE 2M	2480	1.348	0.5	Pass

### 3.2 Test Graphs



BLE 1M 2440MHz



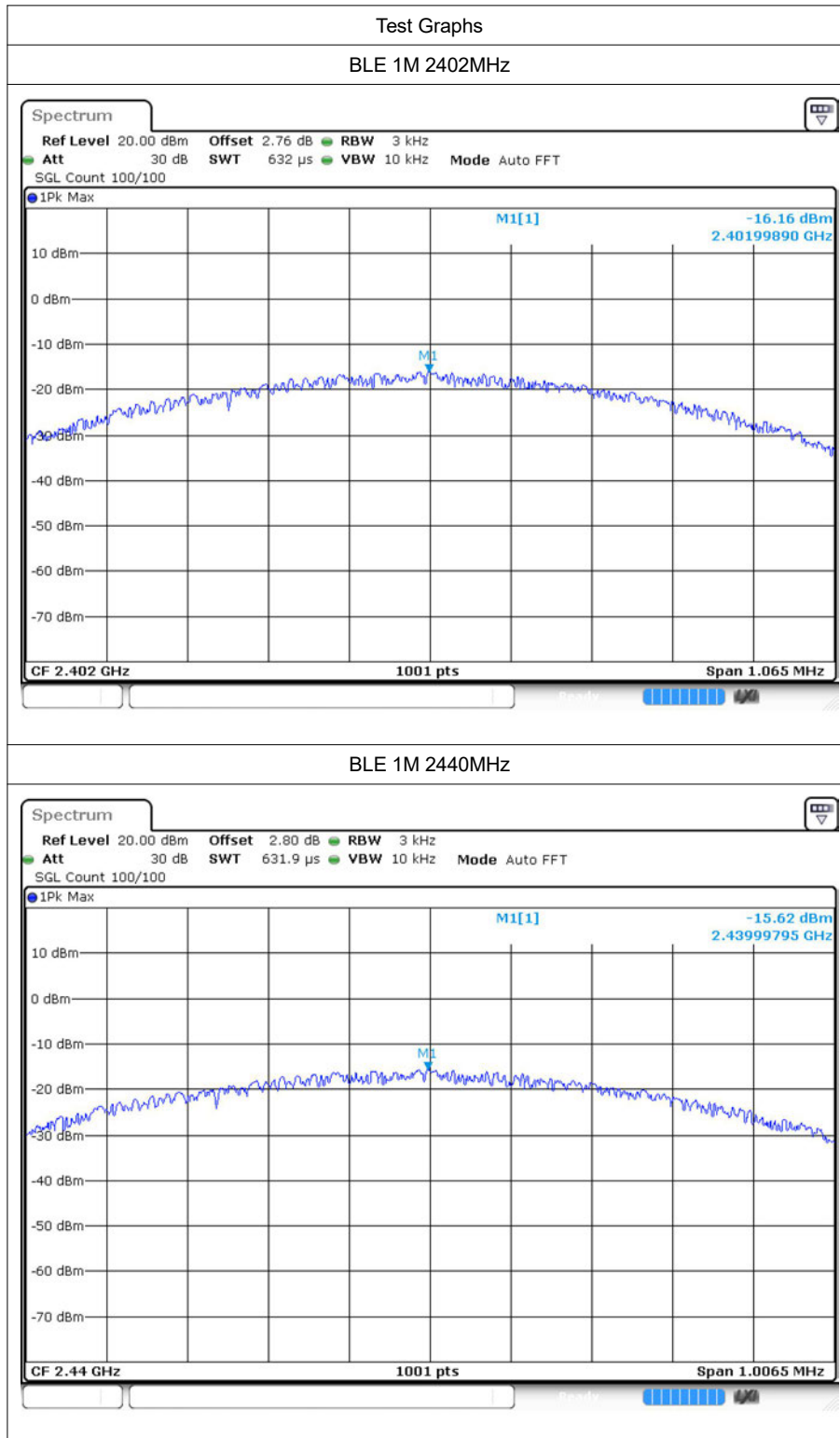


## 4 Maximum Power Spectral Density Level

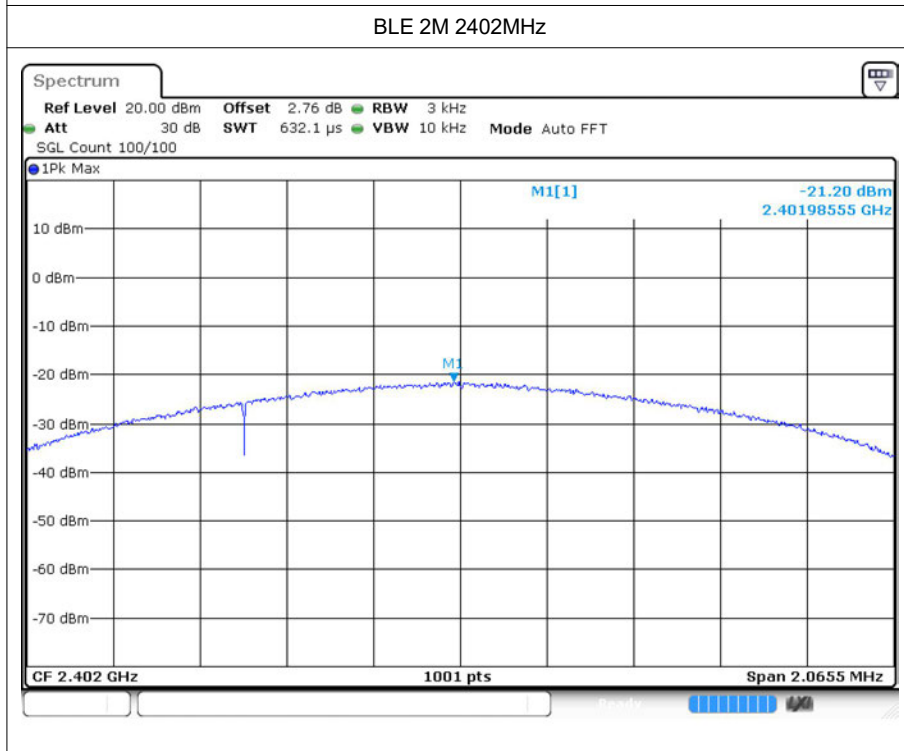
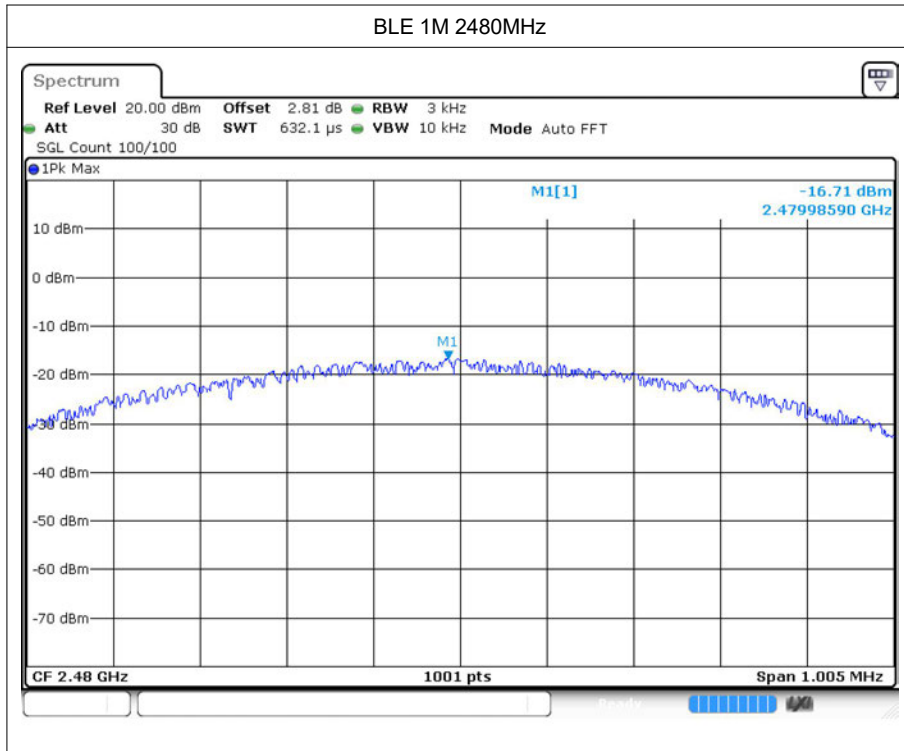
### 4.1 Test Result

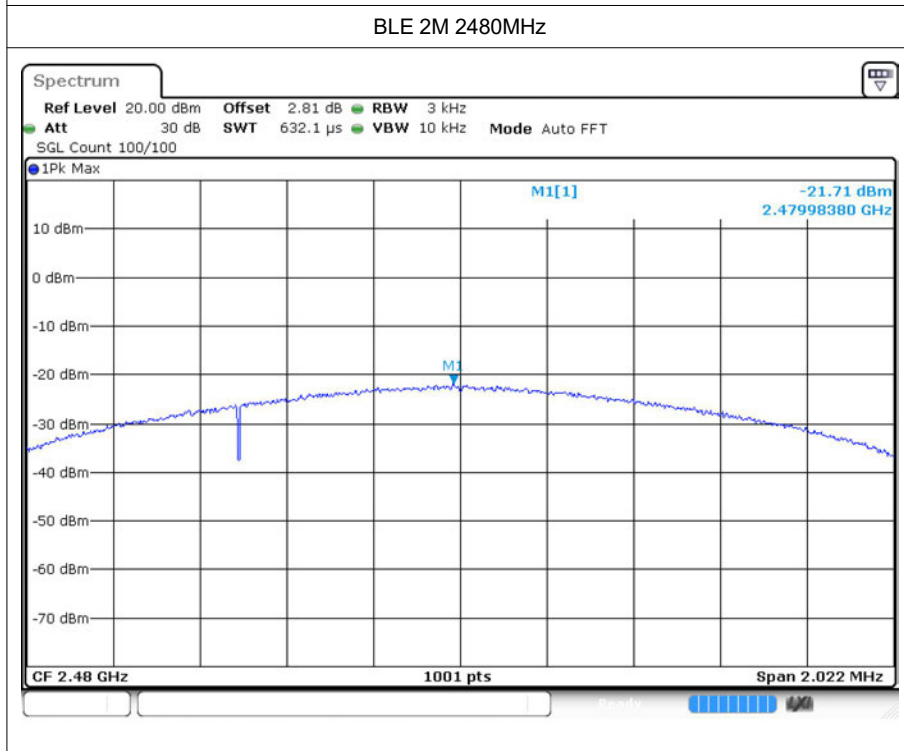
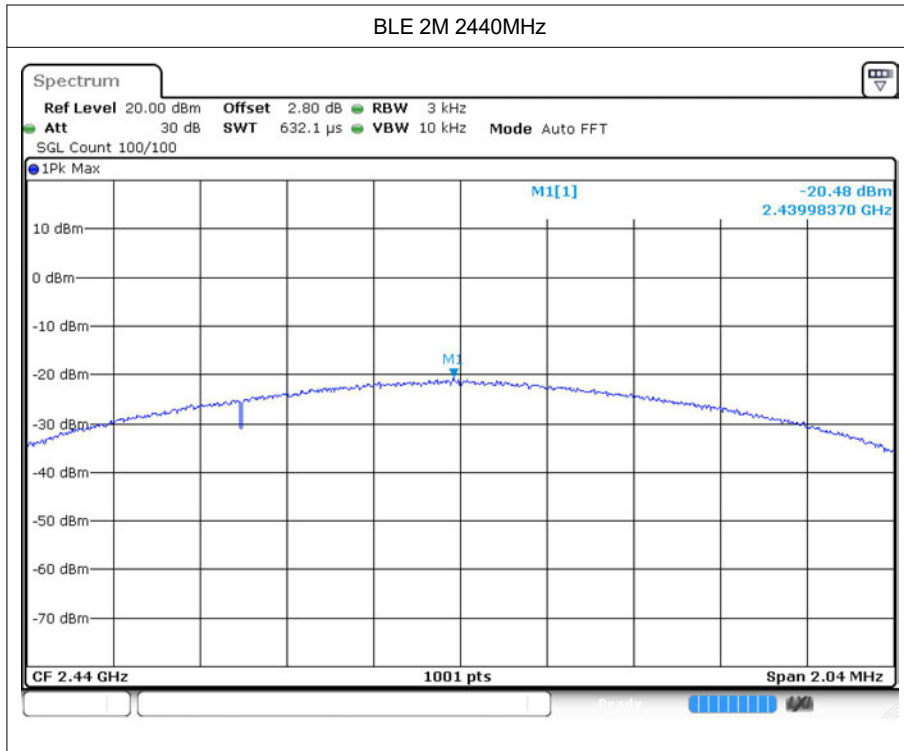
Mode	Frequency (MHz)	Conducted PSD (dBm/3-100kHz)	Limit (dBm/3kHz)	Verdict
BLE 1M	2402	-16.16	$\leq 8$	Pass
BLE 1M	2440	-15.62	$\leq 8$	Pass
BLE 1M	2480	-16.71	$\leq 8$	Pass
BLE 2M	2402	-21.2	$\leq 8$	Pass
BLE 2M	2440	-20.48	$\leq 8$	Pass
BLE 2M	2480	-21.71	$\leq 8$	Pass

## 4.2 Test Graphs









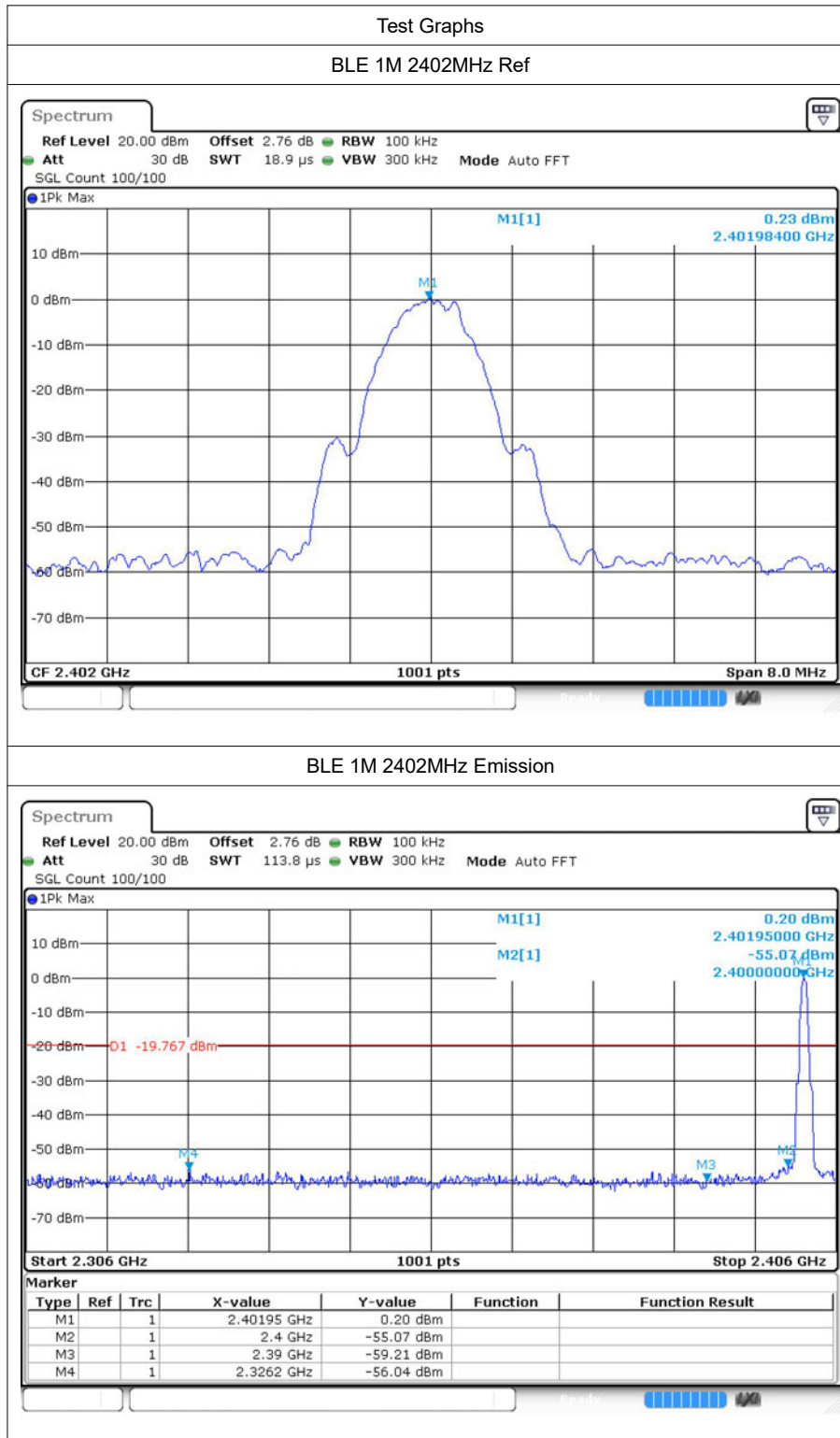


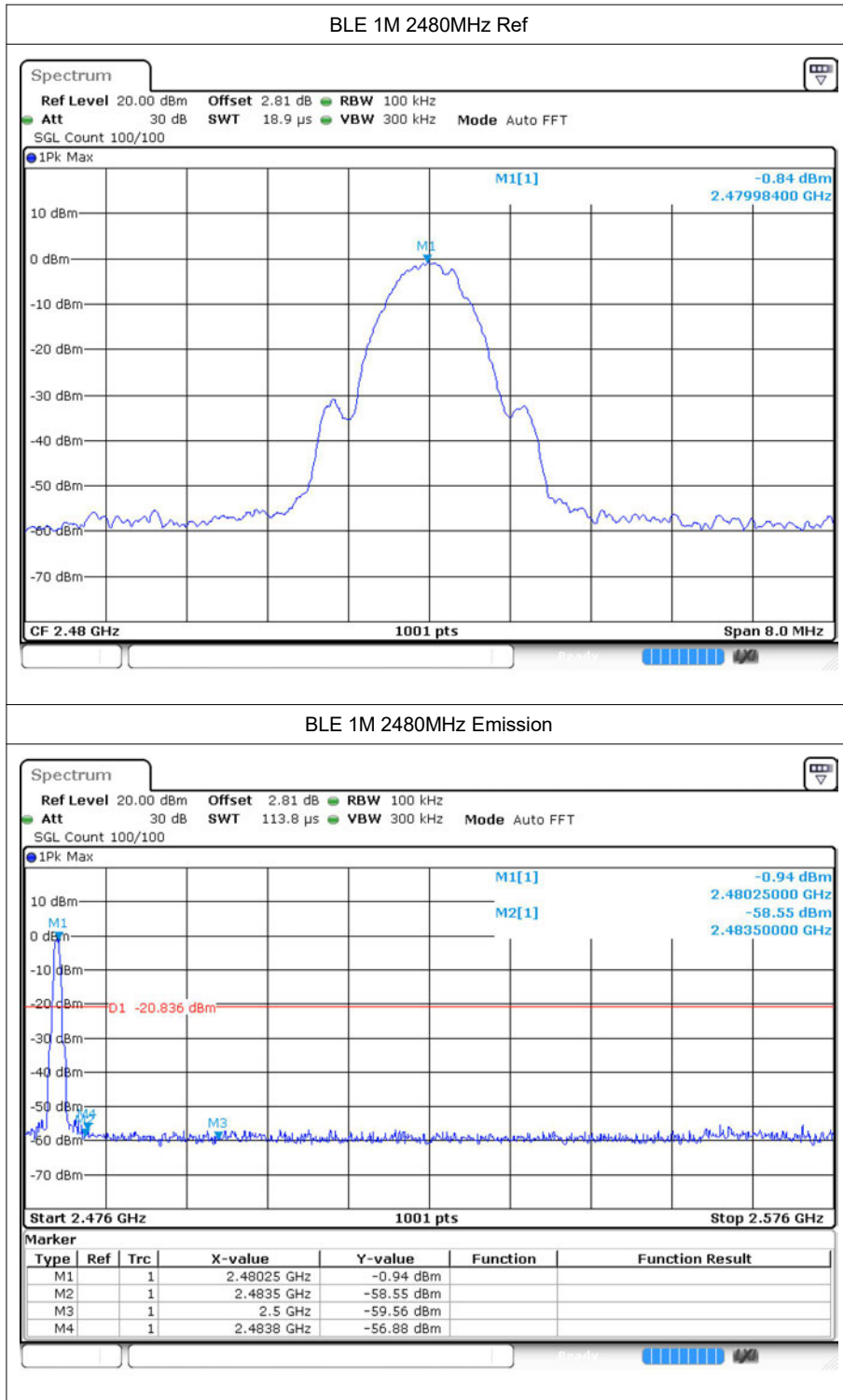
## 5 Band Edge

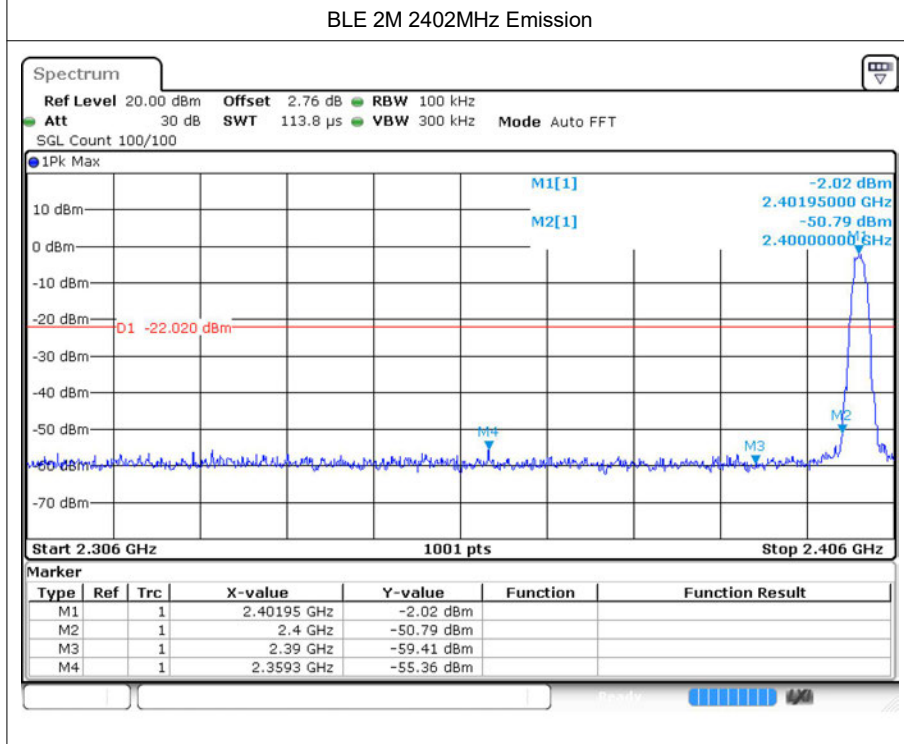
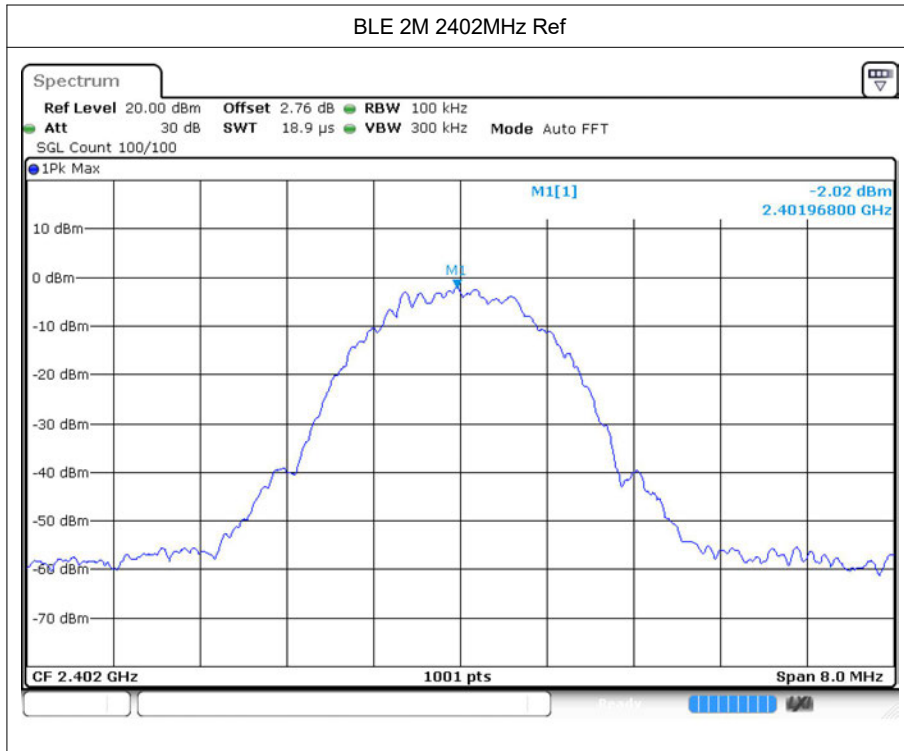
### 5.1 Test Result

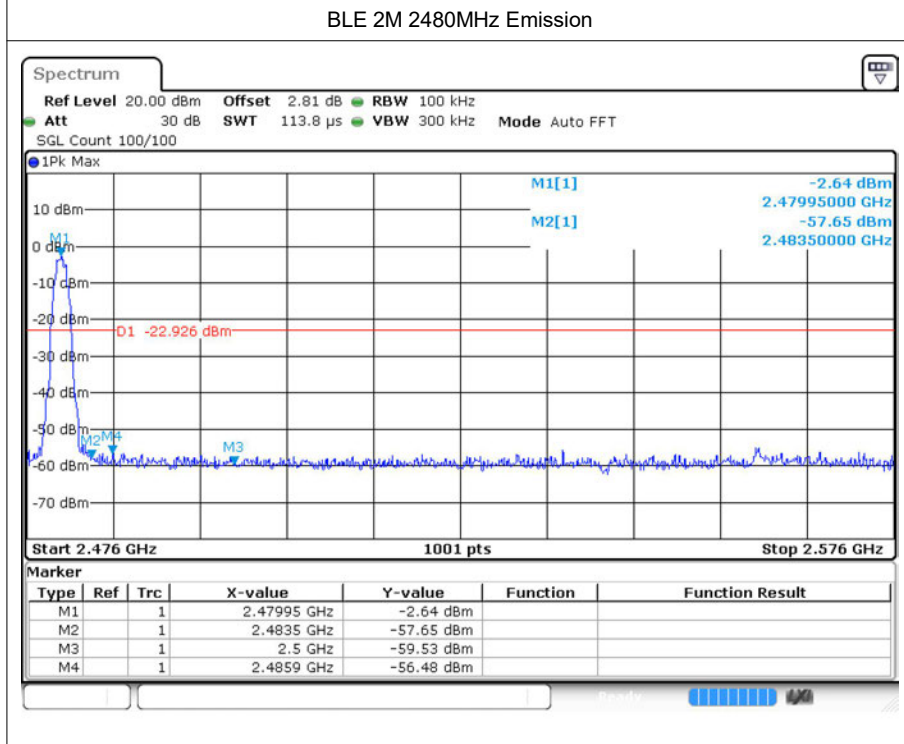
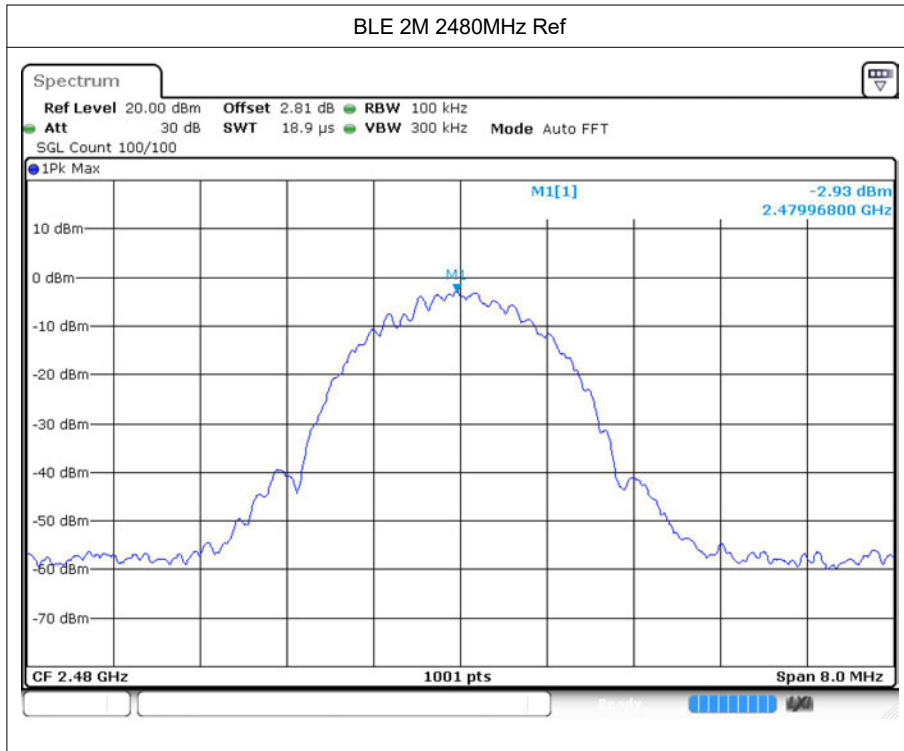
Mode	Frequency (MHz)	Max Value (dBc)	Limit (dBc)	Verdict
BLE 1M	2402	-56.26	-20	Pass
BLE 1M	2480	-56.04	-20	Pass
BLE 2M	2402	-53.34	-20	Pass
BLE 2M	2480	-53.54	-20	Pass

## 5.2 Test Graphs











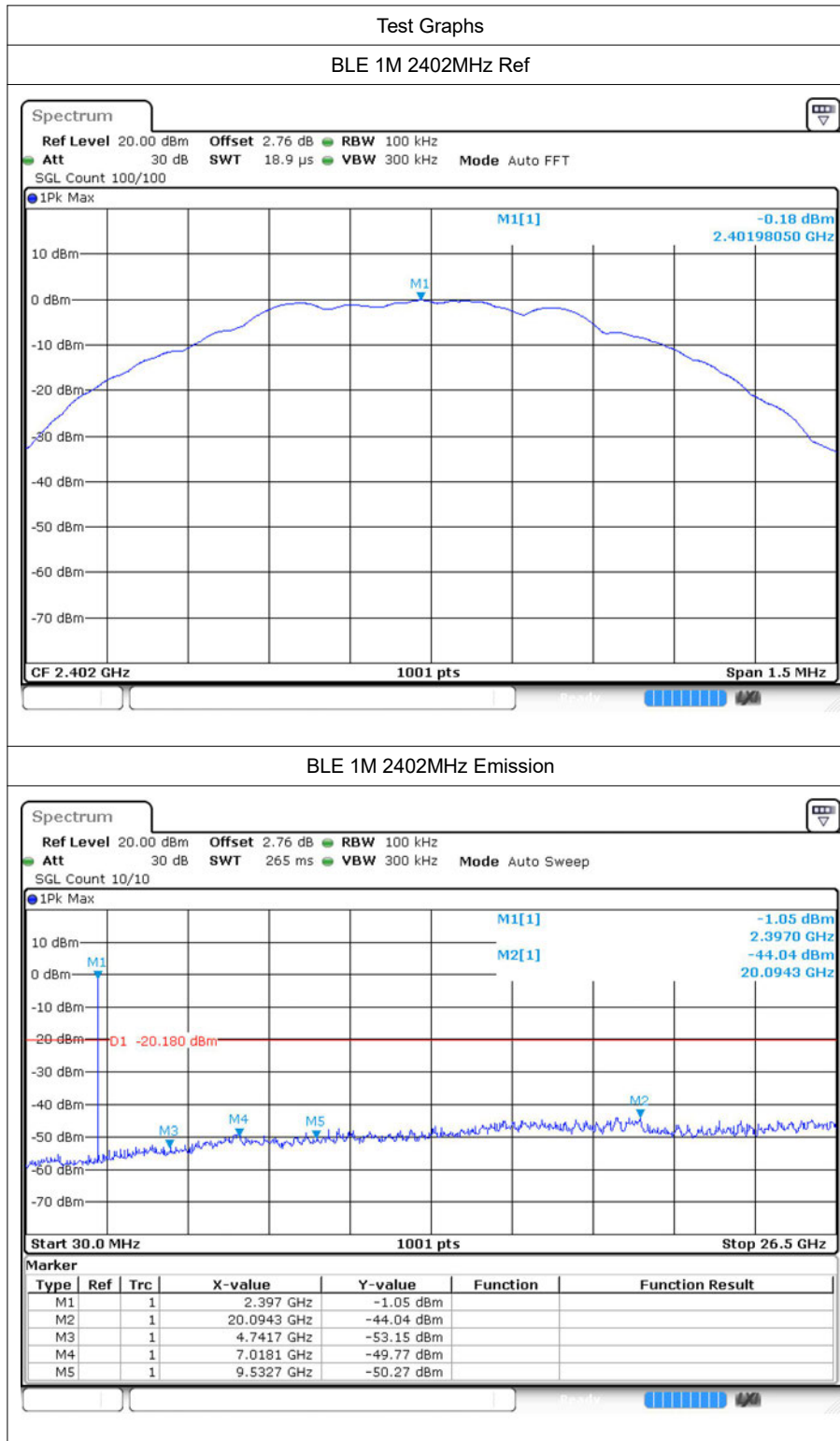
## 6 Conducted RF Spurious Emission

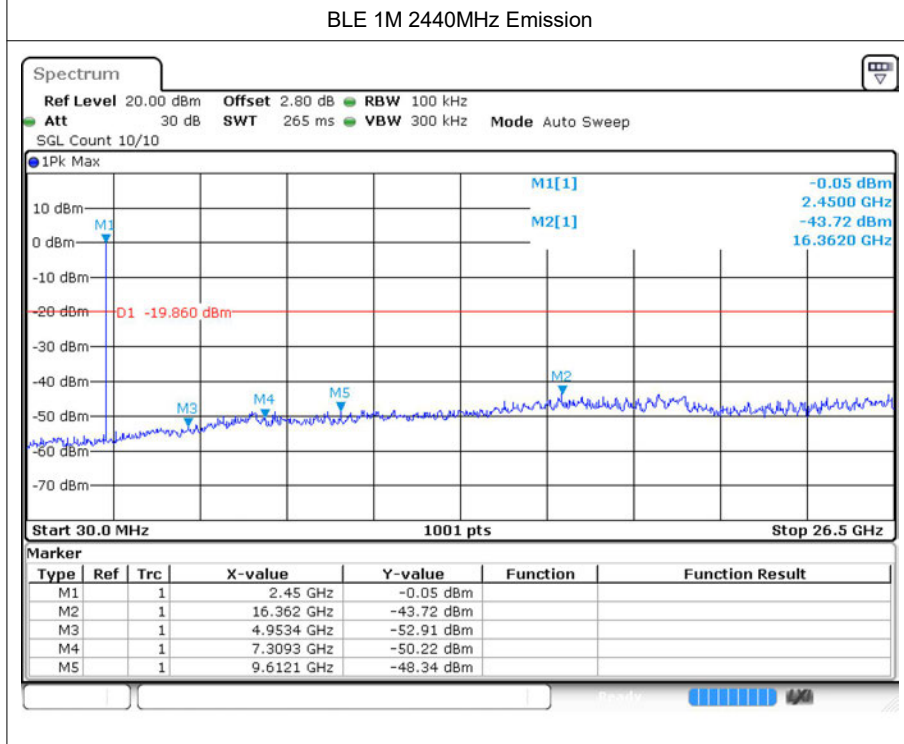
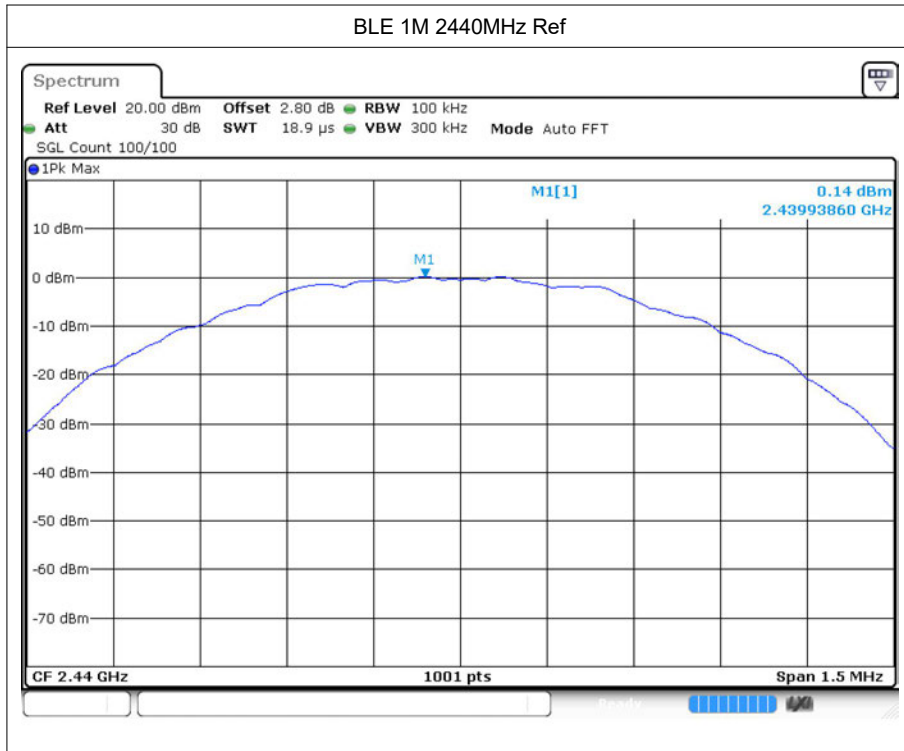
### 6.1 Test Result

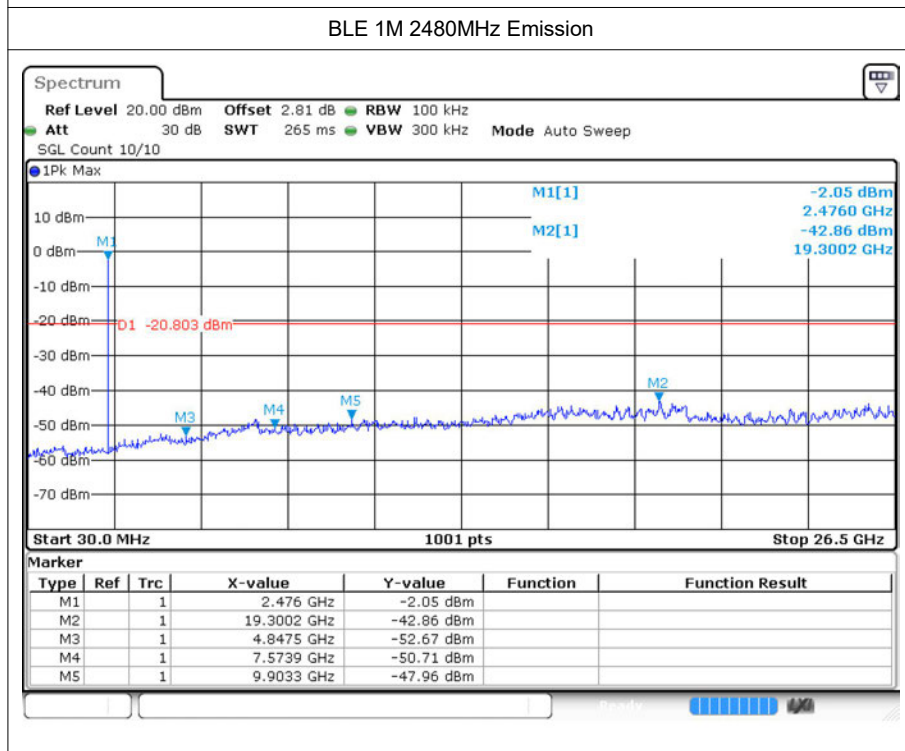
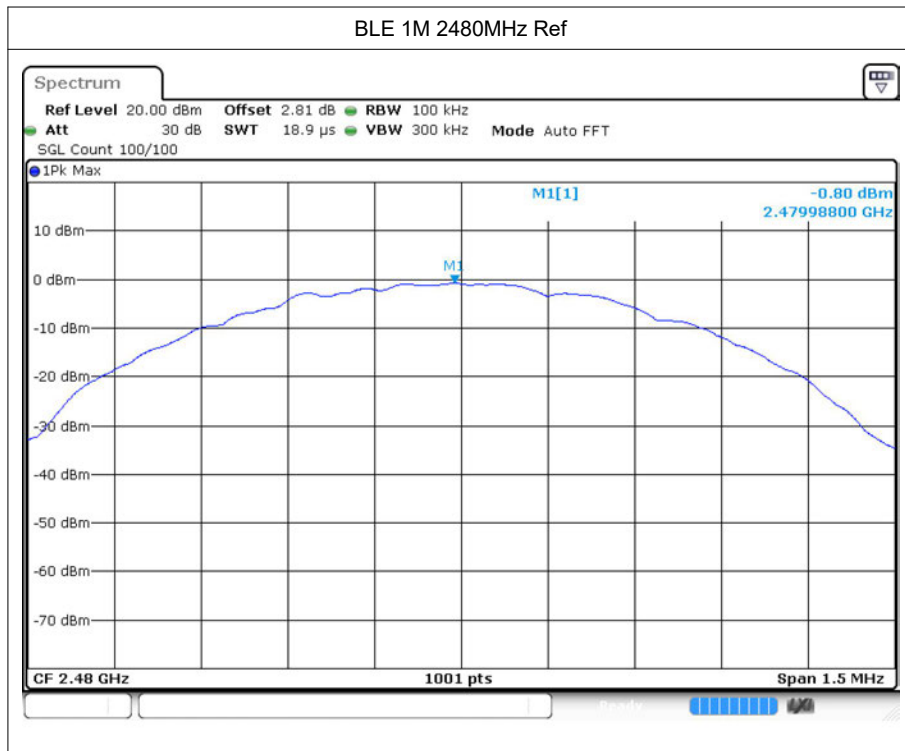
Mode	Frequency (MHz)	Max Value (dBc)	Limit (dBc)	Verdict
BLE 1M	2402	-43.86	-20	Pass
BLE 1M	2440	-43.86	-20	Pass
BLE 1M	2480	-42.05	-20	Pass
BLE 2M	2402	-39.59	-20	Pass
BLE 2M	2440	-41.81	-20	Pass
BLE 2M	2480	-40.58	-20	Pass

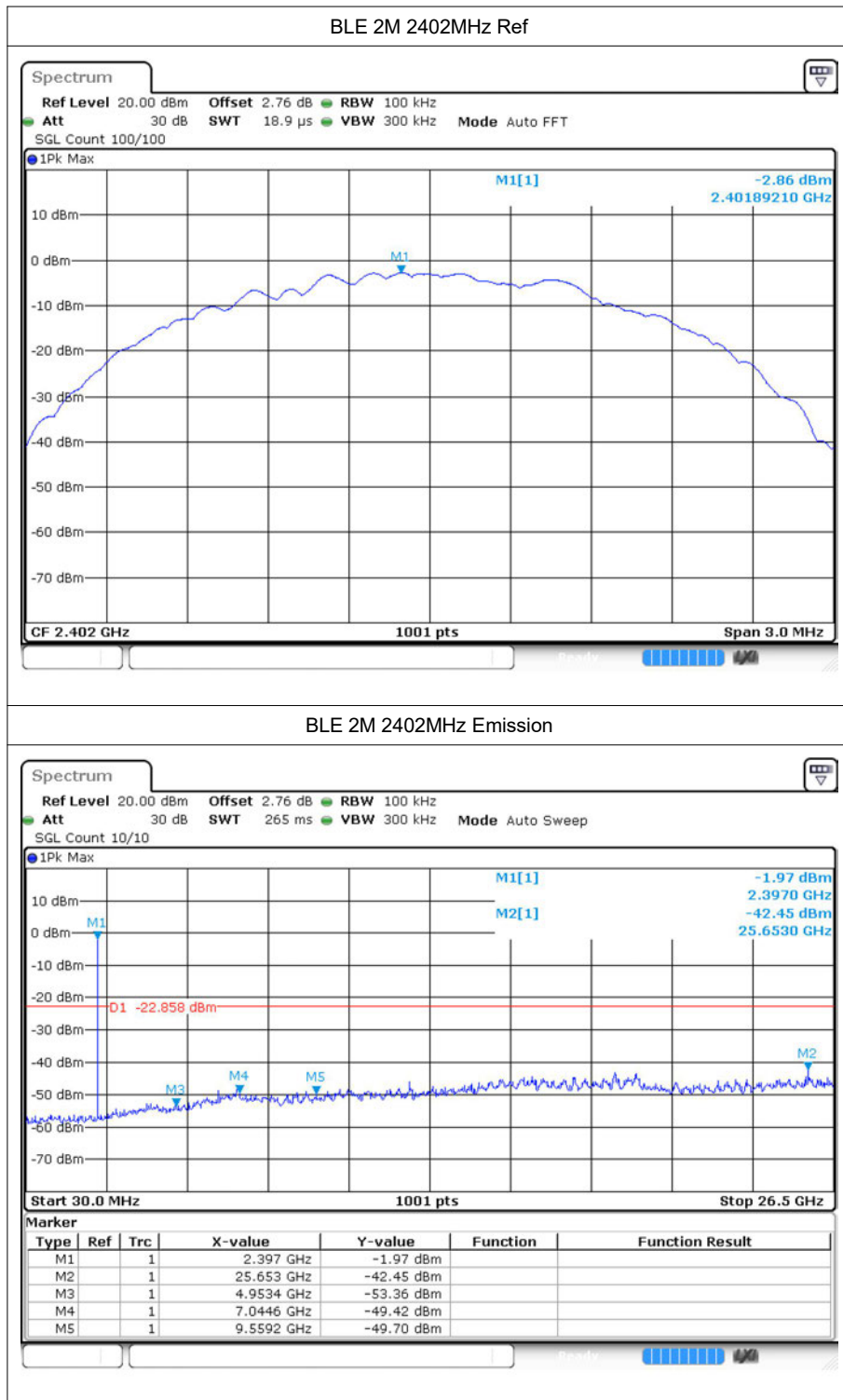


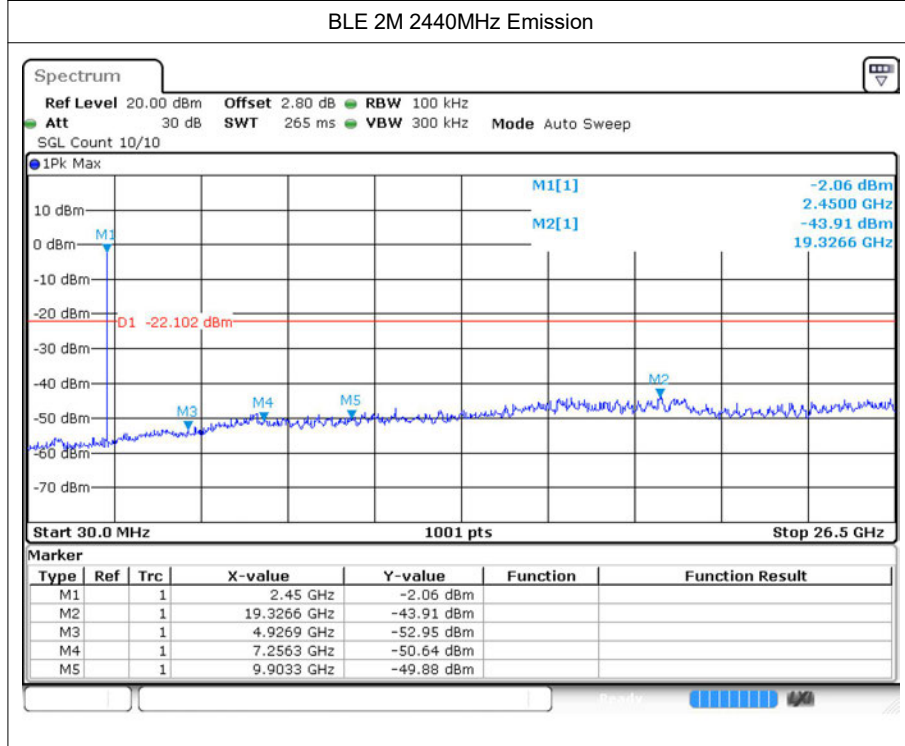
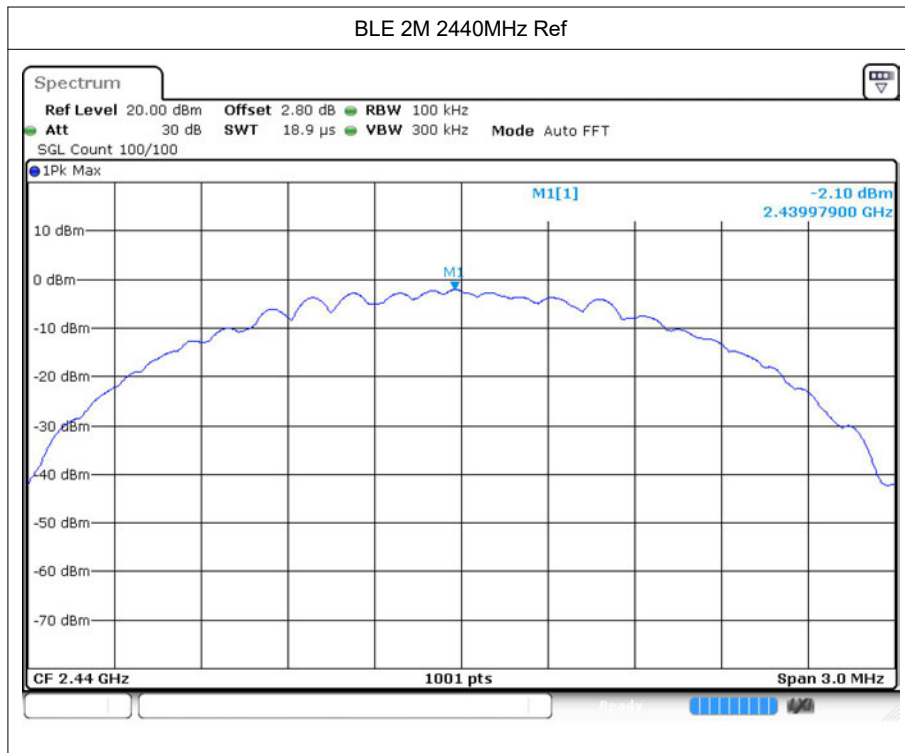
## 6.2 Test Graphs

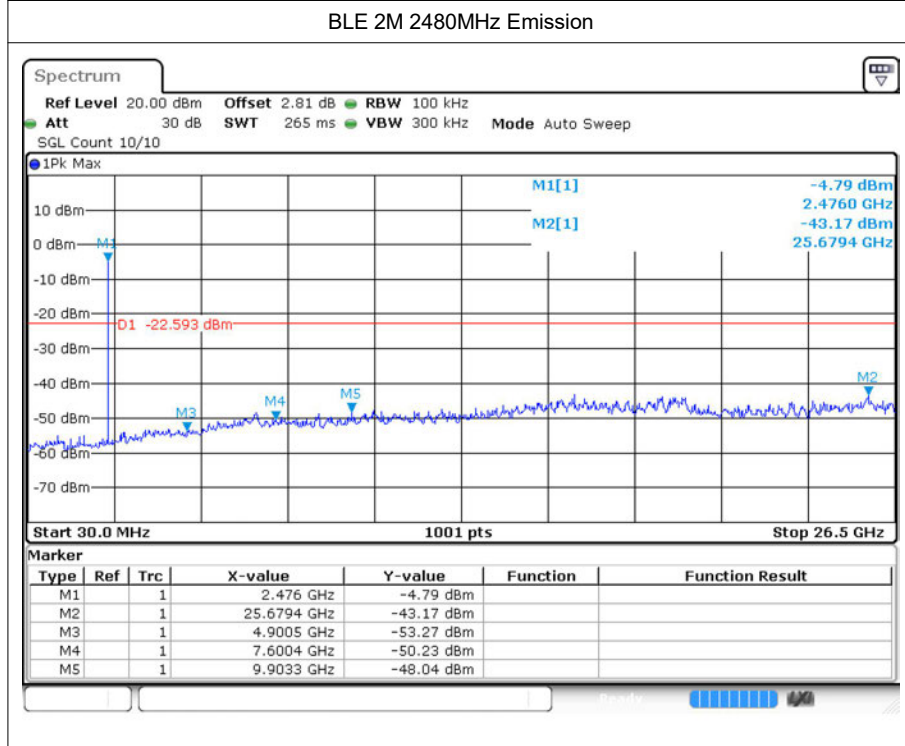
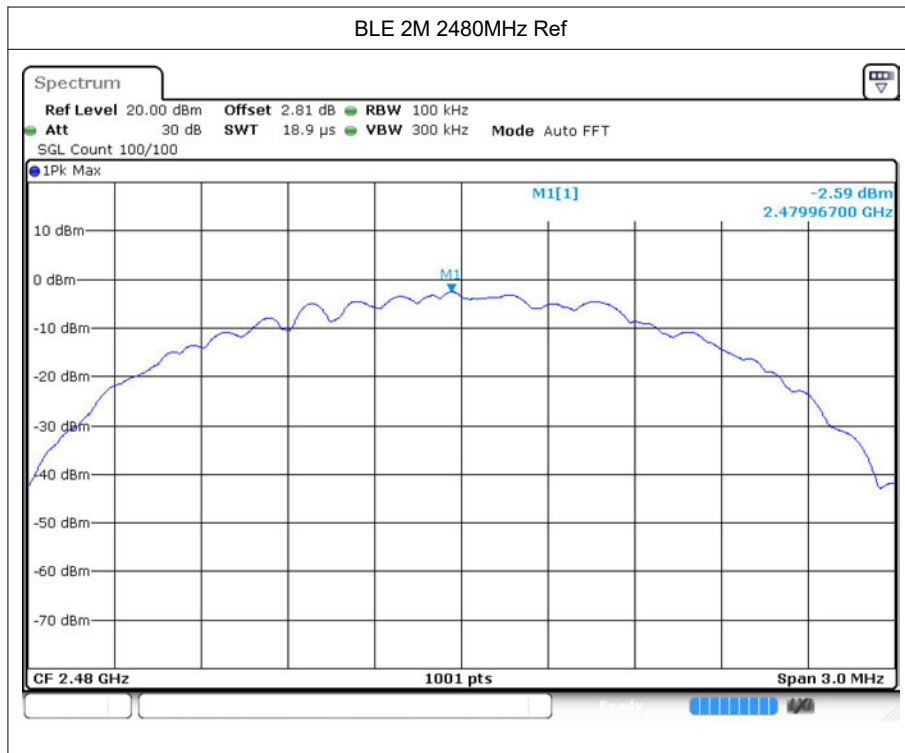










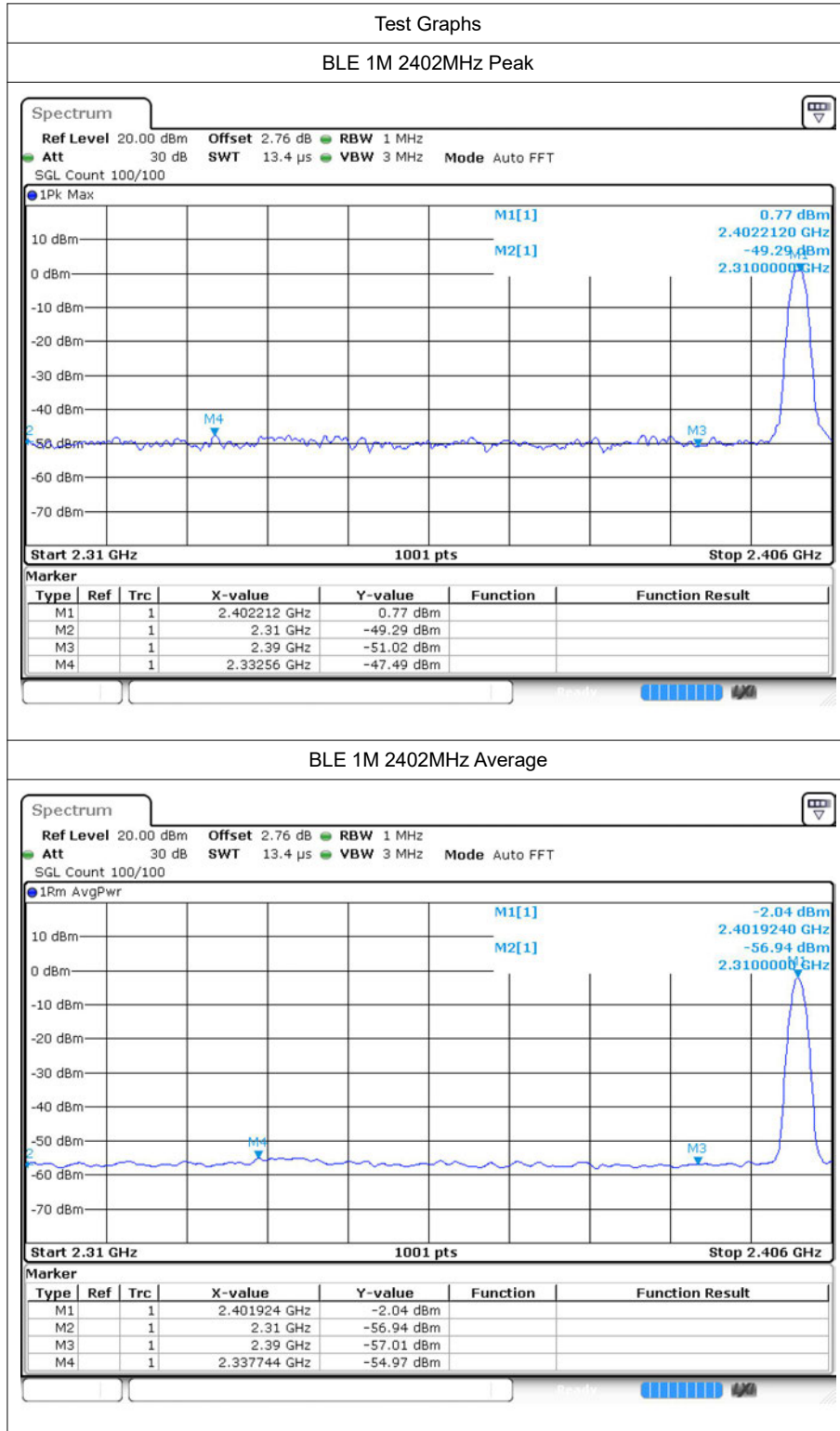


## 7 Restrict Band

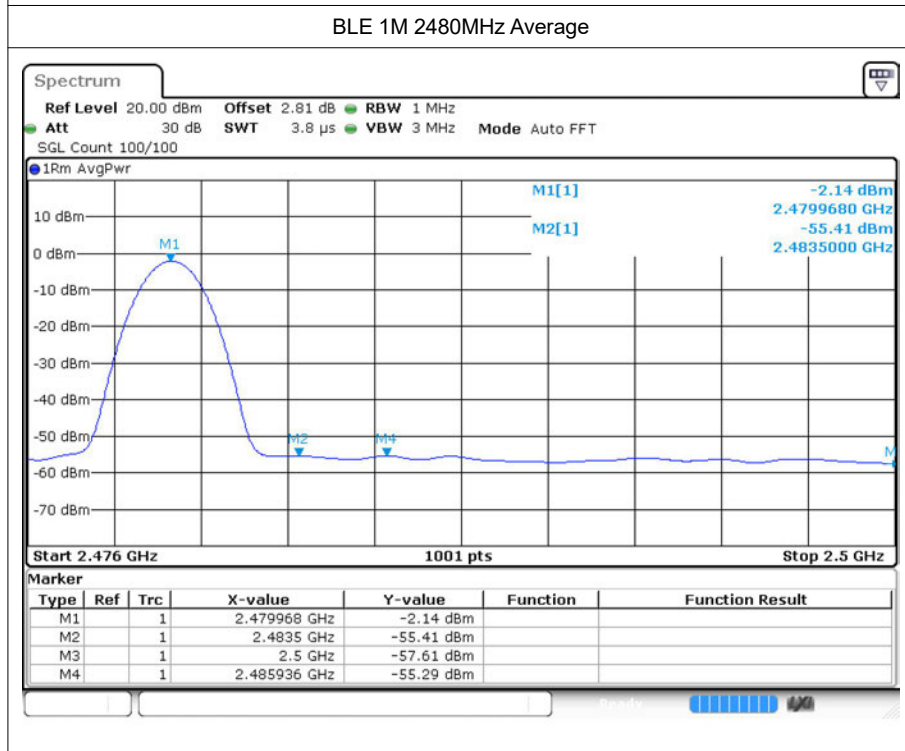
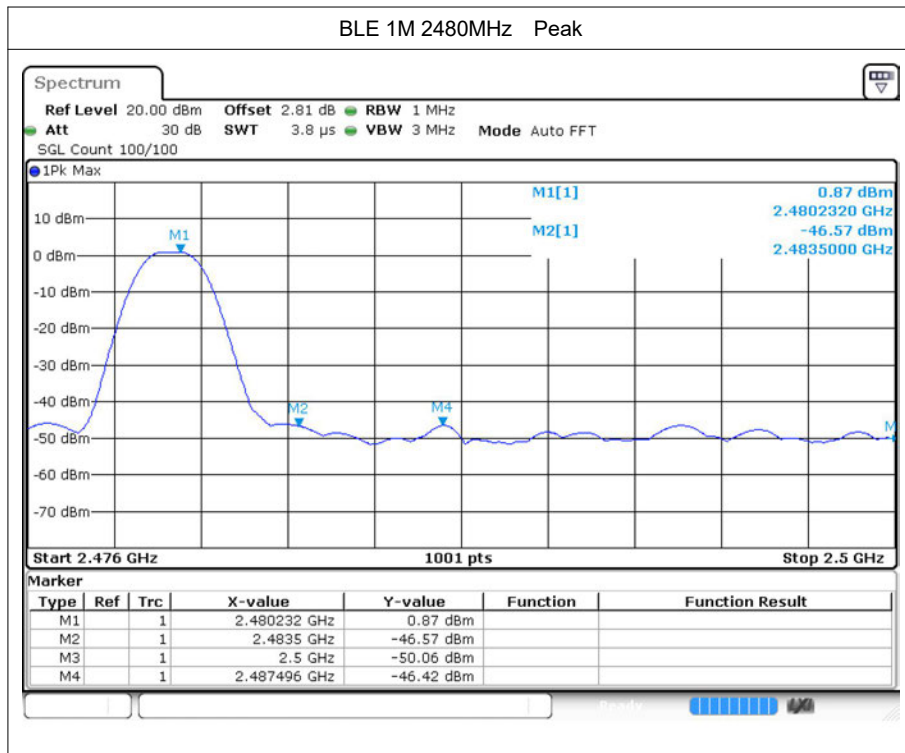
### 7.1 Test Result

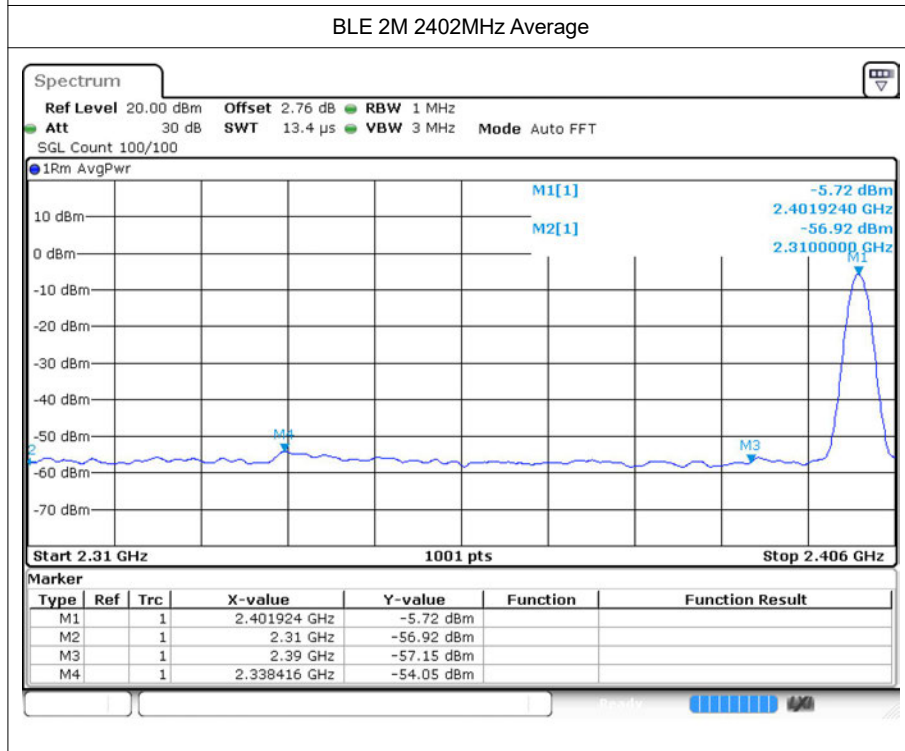
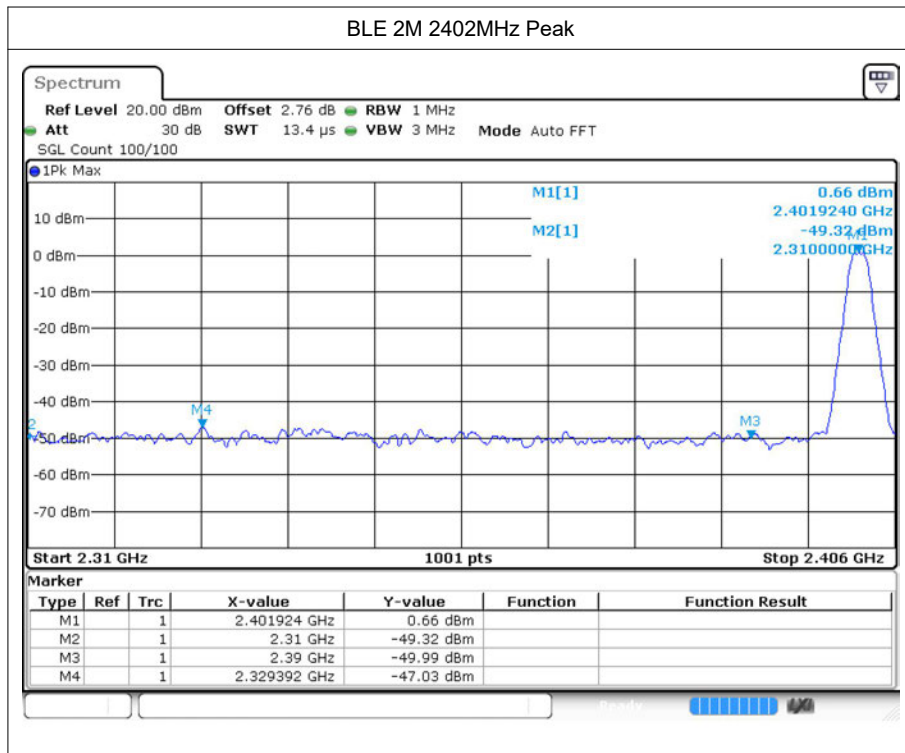
Mode	Frequency (MHz)	Spur Freq (MHz)	Power (dBm)	Gain (dBi)	Duty Factor	E (dBuV/m)	Detector	Limit (dBuV/m)	Verdict
BLE 1M	2402	2310	-49.29	3.0	-	48.94	Peak	74	Pass
BLE 1M	2402	2310	-56.94	3.0	1.94	43.23	Average	54	Pass
BLE 1M	2402	2332.56	-47.48	3.0	-	50.75	Peak	74	Pass
BLE 1M	2402	2337.744	-54.96	3.0	1.94	45.21	Average	54	Pass
BLE 1M	2402	2390	-51.02	3.0	-	47.21	Peak	74	Pass
BLE 1M	2402	2390	-57.01	3.0	1.94	43.16	Average	54	Pass
BLE 1M	2480	2483.5	-46.57	3.0	-	51.66	Peak	74	Pass
BLE 1M	2480	2483.5	-55.41	3.0	1.94	44.76	Average	54	Pass
BLE 1M	2480	2487.496	-46.42	3.0	-	51.81	Peak	74	Pass
BLE 1M	2480	2485.936	-55.28	3.0	1.94	44.89	Average	54	Pass
BLE 1M	2480	2500	-50.06	3.0	-	48.17	Peak	74	Pass
BLE 1M	2480	2500	-57.61	3.0	1.94	42.56	Average	54	Pass
BLE 2M	2402	2310	-49.32	3.0	-	48.91	Peak	74	Pass
BLE 2M	2402	2310	-56.92	3.0	4.61	45.92	Average	54	Pass
BLE 2M	2402	2329.392	-47.03	3.0	-	51.2	Peak	74	Pass
BLE 2M	2402	2338.416	-54.04	3.0	4.61	48.8	Average	54	Pass
BLE 2M	2402	2390	-49.99	3.0	-	48.24	Peak	74	Pass
BLE 2M	2402	2390	-57.15	3.0	4.61	45.69	Average	54	Pass
BLE 2M	2480	2483.5	-45.63	3.0	-	52.6	Peak	74	Pass
BLE 2M	2480	2483.5	-54.46	3.0	4.53	48.3	Average	54	Pass
BLE 2M	2480	2487.4	-44.06	3.0	-	54.17	Peak	74	Pass
BLE 2M	2480	2483.512	-54.55	3.0	4.53	48.21	Average	54	Pass
BLE 2M	2480	2500	-50.88	3.0	-	47.35	Peak	74	Pass
BLE 2M	2480	2500	-56.09	3.0	4.53	46.67	Average	54	Pass

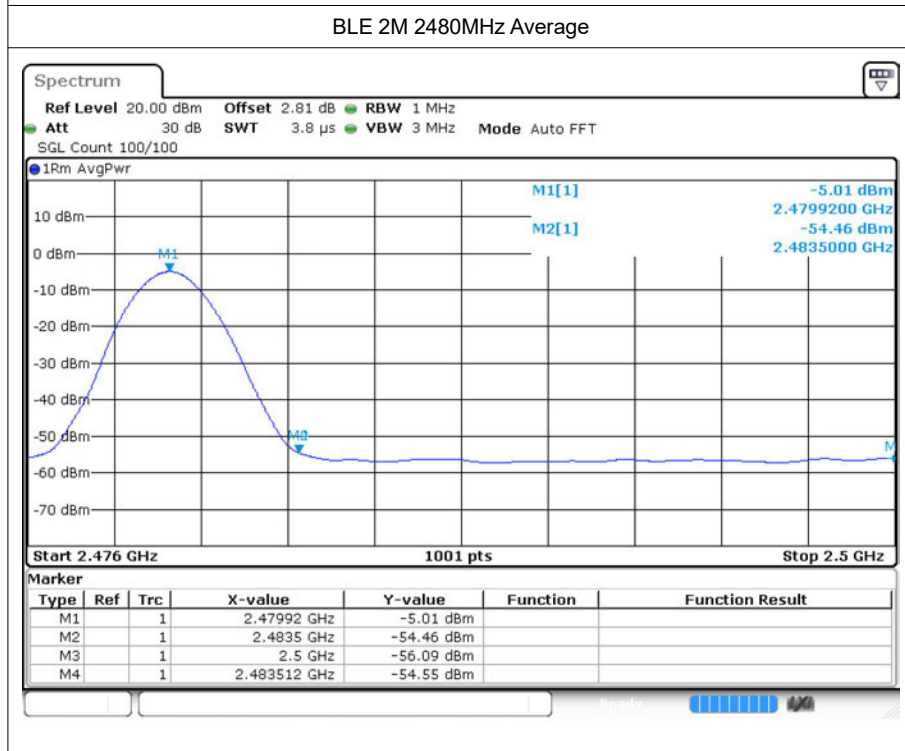
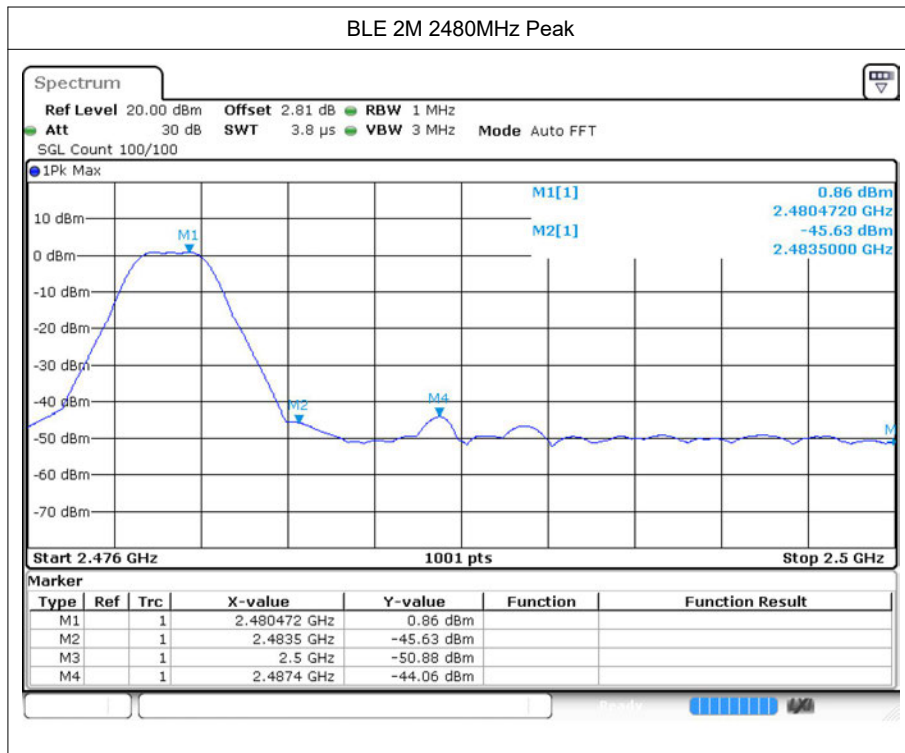
## 7.2 Test Graphs











---The End---